**Math Reviewer**

**Presentation of Data**

**Line Graph:**

* A line graph is used to represent changes in data over a period of time.
* Data such as changes in temperature, income, population, and the like can be represented by a line graph.
* In a line graph, data are represented by points and are joined by line segments.
* A line graph may be curved, broken, or straight.
* Generally, the horizontal axis is used as the time axis and the vertical axis is used to show the changes in the other quantity.

**Bar Graph:**

* A bar graph is a graph that uses horizontal or vertical bars to represent data.
* **Horizontal Bar Graph** - When a bar graph has bars that extend from left to right. In a horizontal bar graph, the horizontal line is the scale of the bar graph.
* **Vertical Bar Graph** - if the bars extend from bottom to top, it is called a vertical bar graph. In a vertical bar graph, the vertical line is called the scale of the bar graph.
* The length of a bar represents a quantity. Hence, the bars, which are representations of the quantities, can easily be compared by examining the lengths of the bars. Since only the lengths of the bars are important, the widths are all made equal.
* A gap between the bars is spaced equally to make them stand out better.

**Pie Chart:**

* A pie graph or pie chart is another visual representation of data.
* It is used to show how all the parts of something are related to the whole.
* It is represented by a circle divided into slices or sectors of various sizes that show each part's relationship to the whole and to the other parts of the circle.
* A circle can be drawn to represent 100%. If a circle is divided into fractional parts (sectors), each represents a percentage. The sum of these fractional parts must always be equal to 100%
* To calculate how many a piece of the pie chart is. Find out the sum total of the Pie Chart and calculate it via (A = sum total of pie chart, B = percentage of pie chart): A × B%

**Pictograph:**

* A pictograph is a graph that uses pictures to illustrate data. To construct a pictograph, the following steps are to be followed:

1. *Collect the necessary data.*
2. *Round off numerical data if necessary.*
3. *Choose an appropriate symbol to represent the subject.*
4. *Indicate the quantity each symbol represents.*

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| **Line Graph** | **Horizontal Bar Graph** | **Vertical Bar Graph** |
| **Pie Chart** | **Pictograph** |  |

**Measures of Central Tendency for Ungrouped Data**

* **Statistics** – Is a branch of Mathematics that deals with the collection organization, presentations, analysis, and interpretation of data.
* **Class** – A collection of sets.
* An important part of data analysis is to find the average value, the middle value, or the most frequent value of a set data, which are commonly known as the *mean, meadian and mode.*
* **Mean**: x̄ (X-Bar)
* **Median**: x̃ (X-Tilde)
* **Mode**: X̂ (X-Hut)

**Mean:**

* To find the mean of a set of data, add up all the numbers in the given set and then divide by the number of data in the set.
* The mean is the most commonly used measure of central tendency.
* When we speak of average, we always refer to the mean.
* It is the sum of all items or terms divided by the total number of items.

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| **Formula:** | **Example:** |
| **Definitions:** | **Data Set:** |

**Median:**

* **Median** – Value in the distribution that divides an arranged ascending or descending distribution in two equal parts.
* **Array** – The distribution of data in the manner of two equal parts.
* The median is the midpoint of the data array.
* Before finding this value, the data must be arranged in order, from least to greatest or vice versa.
* The median will either be a specific value of will fall between two values.

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| **Formula:** | **Example:** |
| **Definitions:** | **Data Set:** |

**Mode:**

* Mode is merely the score with the largest frequency.
* **Modal Class** – Class interval with the highest frequency.

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| **Formula:** | **Example (Up to 2 decimal round up or off):** |
| **Definitions:**  l | **Data Set:** |

**Complete Data Set:**

* Interval = 5

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| **Given Data** | **Frequency (f)** | **Central Mode (x)** | **Multiply Frequency (Fx)** | **Class Boundary (Lower Boundary)** | **Less Than Cumulative Frequency** |
| 41 – 45 | 1 | 43 | 43 | 40.5 – 45.5 | 50 |
| 36 – 40 | 8 | 38 | 304 | 35.5 – 40.5 | 49 |
| 31 – 35 | 8 | 33 | 264 | 30.5 – 35.5 | 41 |
| 26 – 30 | 14 | 28 | 392 | 25.5 – 30.5 | 23 |
| 21 – 25 | 7 | 23 | 161 | 20.5 – 25.5 | 9 |
| 16 – 20 | 2 | 18 | 36 | 15.5 – 20.5 | 2 |
|  | Total: 40 |  | Total: 1200 | Median Class: 23 |  |

**Explanation of “Complete Data Set”:**

* **Central Mode:** To get the central mode (x), you must find the median or middle of the interval.
* **Frequency:** To get the multiply frequency (Fx), multiply the frequency and central mode.
* **Class Boundary (Lower Boundary):** Class Boundary (Lower Boundary) is basically “true limits” and you just minus 0.5 to get the lower boundary.
* **Class Frequency:** To get the class frequency, you just add up vertically and it stacks or adds up.
* **Median Class:** To get the median class, you need to add up all the frequencies and divide by 2, and find the closest number in class frequency.

**Integers**

* **Integers** - Integers represent the set of positive and negative whole numbers, including zero
* **Positive Integers** - Integers greater than zero.
* **Negative Integers** - Integers less than zero.
* **Zero** - The integer that represents neutrality or absence of quantity.

**Addition and Subtraction:**

* If they are have the same sign, add them and copy the sign of the largest number.
* If they have a different sign, subtract them and copy the sign of the largest number.

**Multiplication and Division:**

* If they have the same sign, multiply them or divide them with a positive sign.
* If they have a different sign, multiply them or divide them with a negative sign.